BEST MANAGEMENT PRACTICES
FOR
TRANSFER STATIONS/ RECYCLING CENTERS

January 2001

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire Department of Environmental Services
Waste Management Division
6 Hazen Drive
Concord, NH 03301-6509

Printed on Recycled Paper

NHDES-WMD-97-1

BEST MANAGEMENT PRACTICES
FOR
TRANSFER STATIONS/ RECYCLING CENTERS

Prepared by:

N.H. Department of Environmental Services
Waste Management Division
6 Hazen Drive
Concord, NH 03301-6509

January 2001

ACKNOWLEDGMENTS

This document has been written for solid waste facility operators, solid waste and recycling committees, town officials, and concerned citizens. The primary author is Parker Morgan with comments and suggestions received from Pamela Sprague and Chris Way of the Department of Environmental Services (DES), Liz Bedard of the Governor's Recycling Program, Marghie Seymour of New Hampshire the Beautiful, Joan Marshall of Franconia, Duncan Watson of Keene, Tony Ilacqua of Littleton, Wayne Bailey of Windham, and David Crane of Compensation Funds of New Hampshire. Their comments and suggestions have greatly improved the content and usefulness of the document. DES welcomes any additional comments or suggestions that may be forwarded to Planning and Community Assistance Section at 271-1749.

It is hoped that this document serves to foster in New Hampshire's facilities solid waste operations that are safe, economical, and environmentally sound.

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

This manual is intended to help those New Hampshire communities and businesses that own/operate transfer stations and recycling centers to evaluate their solid waste management operations and to institute Best Management Practices (BMPs) that are safe, economical, and environmentally sound. The target audience for this manual includes solid waste management facility managers and operators, community officials, and other interested persons who want to improve the management practices of their solid waste facility. This document is written to accompany the manual titled "*Transfer Station and Recycling Center Design and Operations*" (April 1996) which is available from the NH Department of Environmental Services (DES), Waste Management Division (WMD). There is some overlapping of information as each document was written to stand-alone. However, it is recommended that this document be used in conjunction with the "*Transfer Station and Recycling Center Design and Operations"* manual.

Transfer stations/recycling centers (TS/RC) form a key component of all integrated waste management system. Integrated waste management systems are now developing throughout the state to serve the solid waste management needs of New Hampshire communities in a progressive manner. The closing of unlined landfills has resulted in a need to develop "replacement" facilities to better protect the environment, public health and safety. For example, lined landfills and various types of processing/treatment facilities including waste-to-energy facilities, composting operations and material recovery facilities. In addition, there is a growing need to conserve natural resources and capacity at final disposal facilities by increasing recycling and reuse opportunities. Environmentally protective replacement facilities and recycling markets tend to be more regional in nature than the now obsolete unlined landfills. Thus, transfer stations/recycling centers provide a critical link to managing solid waste within these more regionalized systems.

When planning development of a new transfer station/recycling center or improvements to an existing transfer station/recycling center, it is important to first consider BMPs. BMPs help to

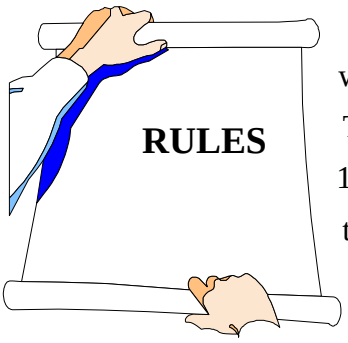
ensure the safety of the operators, facility users and of the surrounding environment. In addition, BMPs are designed to allow the facility to be operated in a cost efficient manner.

This manual contains seven sections. Section I concerns rules and permits. Section II provides an overview of typical construction and startup problems and solutions. The remaining sections discuss BMPs for specific TS/RC operations.

As there are only limited writings on the subject, this manual mainly draws on the experience of WMD personnel and several solid waste facility managers and operators from New Hampshire. Please forward any comments or suggestions about the format or content of this manual to the Planning and Community Assistance Section at (603) 271-1749.

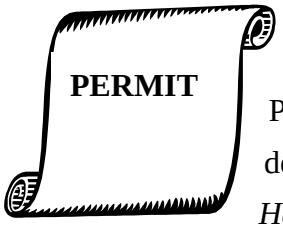
SECTION I
RULES & PERMITS

SOLID WASTE RULES. The *New Hampshire Solid Waste Rules* apply to all persons who generate solid waste and all persons who own or operate facilities which collect, store, transfer, process, treat and/or landfill solid waste. The rules were readopted on October 29, 1997 and amended August 12, 2000. The amended rules contain several requirements concerning the operation of a TS/RC including Chapter Env-Wm 2700, the Universal Facility Requirements, Chapter Env-Wm 2100, Collection, Storage, and Transfer Facility Requirements, and Chapter Env-Wm 2600, Management of Certain Wastes.



The purpose of the Universal Facility Requirements is to "ensure that all facilities shall be located, designed, constructed, operated and closed in a manner that does not endanger public health or adversely affect the environment and which minimizes the potential for accidents that could lead to personal injury or property damage." Chapter Env-Wm 2100 specifies the requirements that are applicable to all TS/RC as defined in Env-Wm 102.35. The "Management of Certain Wastes" chapter presents rules for managing wastes such as asbestos, ash, tires, contaminated soils, and infectious waste.

STATE PERMITS. Several different permits, including state and local, may be required before construction of a proposed TS/RC may begin. The New Hampshire Department of Environmental Services, Public Information and Permitting Office (PIP) at (603) 271-2975 is available to assist you in determining which state permits are needed. In addition, the *New Hampshire Solid Waste Rules* are available from PIP and are located on the DES web page: www.des.state.nh.us.



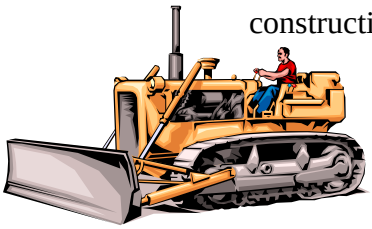
In New Hampshire, most transfer stations and recycling centers (for exceptions see Env-Wm 302.03 and Env-Wm 2108) require a facility permit to construct and to operate issued by the Department's Waste Management Division. The type of facility permit required depends on several factors, including the quantity of solid waste accepted. In addition, a "site specific

permit" may have to be obtained from the Water Division depending on the amount of terrain altered and water quality problems present. The alteration of terrain includes areas to be used as driveways, building area, parking lots, landscaping, and utility construction. If construction work is proposed for wetlands, a wetlands permit must be obtained from DES. Any site located on a state highway needs a permit from the NH Department of Transportation to access the highway and, in certain cases, a junkyard permit.

LOCAL PERMITS. To determine which local permits are required, contact the local officials. Local approvals, which may be required, include zoning board, planning board, building permit, and driveway permit.

SECTION II
COMMON CONSTRUCTION AND STARTUP PROBLEMS

COMMON CONSTRUCTION PROBLEMS AND SOLUTIONS. The following



construction problems and resulting impacts should be of concern during construction of any TS/RC. Surface waters may be significantly impacted by construction through improper road cuts, culvert placement, topsoil removal, improper grading of the site, heavy equipment usage during rainstorms, and working with equipment in wet areas of the site. The impact of the site and surrounding surface waters includes erosion, increased turbidity, decreased light penetration, increased nutrients and trace metals, bacteria, and other pollutants such as oil and grease. These problems and their impacts can be addressed and prevented through careful planning and by following the state approved plans.

Improper road cuts lead to soil erosion, inadequate lines of sight upon entering and/or leaving the site, and insufficient storm water control. The placement and slope of culverts is important as it affects the flow of surface waters and storm water runoff. Improper topsoil removal can lead to major soil erosion. Once topsoil is removed, the exposed area must be stabilized against erosion by covering with hay, large tarps, or grading slopes 3 to 1 or greater. The base of the slope should be lined with bales of hay or silt fencing. The use of heavy equipment during rainstorms or in muddy areas is not recommended because the ruts left behind form channels for the rainwater, leading to erosion.

COMMON STARTUP PROBLEMS AND SOLUTIONS. As with any new venture, there are bound to be startup problems, especially during the first few months. Some problems will be simple to fix; others may persist until additional construction can take place, or decline over time as your residents adjust to the new facility.

The following are some of the predictable problems you may encounter.

DAYS AND HOURS OF OPERATION--Realize up front that not everyone is going to be happy

Hours of Operation

Monday _____
Tuesday_____
Wednesday_____
Thursday_____
Friday_____
Saturday_____
Sunday_____

with the days and hours of operation of the TS/RC. You may find that after opening the new facility, it needs to be open more days, or for longer or later hours. If your facility is in a town that attracts a lot of seasonal tourists with second homes, you may find that a busy time for your facility is Sunday afternoon; before the tourists leave, they will drop off their trash. Weekends can be especially busy during the fall season when residents bring in leaf and yard waste for composting. Another busy time of the year is in the spring when homeowners clean up after winter. In some cases, it may be worthwhile to keep your facility open longer and for more days in the summer when more people reside in town.

If most of your residents work during the day, it may be advantageous to have your solid waste facility open late one evening during the week. This will allow your residents an opportunity to bring their solid waste to the facility after work. However, adequate lighting is required if you decide to operate after dark.

ACCESS CONTROL --One major startup problem is the ability to limit access to the facility to the permitted users. To prevent unauthorized use and vandalism, the facility should be encircled by natural (trees, boulders, etc.) and/or man-made fencing. In general, commercial facilities control access at the gate or scale house, and through signage. Many communities, especially those that have free disposal, use vehicle stickers to control who uses the solid waste facility. A variety of methods for distributing the stickers are used including giving them out at the town office or at the facility. In many cases there is a charge for the sticker.

It is the operator's job to check each vehicle entering the facility to confirm that the vehicle has an up-to-date sticker. During the startup phase, many users will appear without a vehicle sticker. There should be a policy in place to handle these situations. For example, one warning is given and the vehicle plate number is recorded. If the same vehicle appears again without a sticker, the user will be refused use of the facility and referred to the appropriate place to obtain a vehicle sticker.

MONEY HANDLING -- Another major decision is whether the operator will be authorized to handle money. At many facilities, a fee is charged to dispose of tires, refrigerators, air conditioners, stoves, C&D, and furniture. For the convenience of the users, many operators collect the fee at the facility and issue the user a receipt with a copy retained by the operator for the facility records. The operator should be bonded if he is collecting cash. Some operators collect fees but only in the form of a check; no cash is collected. To reduce money handling, the municipality could establish a vehicle registration fee that would be used for collecting and recycling motor vehicle wastes.

PREPARING RECYCLABLES--You may have to modify your procedures for preparing recyclables after opening the new facility. The quantity of recyclables received in the first few weeks of operation may be more than anticipated because permitted users have been stockpiling recyclables in anticipation of the opening of the new facility. For the first couple of weeks, operators may need to work overtime to manage the backlog of recyclables. Depending on the number of operators and the facility layout, you may be able to prepare recyclables at the same time users are depositing their recyclables. Only operators should be allowed in the preparation area or where equipment is operating because of the possibility of injury. During startup, the operator's main job should be educating the users on how to properly prepare their material (remove bottle caps, rinse out containers, etc.) for recycling and to deposit their waste and recyclables in the proper place. Operators must maintain constant oversight to meet the recycling market's quality control standards in preparing recyclables.

RECORD KEEPING--Your procedures for record keeping may undergo some changes during start-up of the facility. You need to keep accurate records of the amounts of recyclables and dates sent to market, revenues received, and costs for hauling and disposing of your nonrecyclables. In addition, your records should contain the information necessary to meet state and town requirements. For example, the DES supplies forms for the completion of an Annual Facility Report each year for facility operations. This report requires information such as quantities of recyclables sent to market, name of markets, name of nonrecyclable disposal facility, and quantity of construction and demolition debris collected. Records required by DES must be kept on site indefinitely.

FACILITY AESTHETICS--Maintaining a clean, odor, and vector free facility is extremely

important for environmental protection and to protect the health and safety of the operators and the users of the facility. A time schedule and checklist/punch list for maintaining and cleaning the facility must be developed and conscientiously followed. If your facility is located in the North Country or other rural area, you may need to take special precautions and make equipment modifications to keep animals, including bears, out of the solid waste. Some of these precautions include leaving the ram in the compactor, installing a heavy duty cover over the compactor chute, placing an electrified fence around the chute to the compactor, and keeping the facility clean of putrescible waste.

SAFETY--Written safety procedures should be developed as required by RSA 281-A and

training conducted for the operators during startup. During startup, the safety procedures may need to be modified to meet the actual needs of the operators. Safety procedures should deal with emergencies, building and site safety, potential health hazards, equipment safety, and operator safety (see Table 4).

SEASONAL OPERATING PROBLEMS AND SOLUTIONS--New Hampshire's winter

presents a special set of conditions for which to plan, including heavy and deep snow, ice, sub-freezing temperatures, and strong winds. Snow must be removed after each storm from driveways, parking lots, equipment, and building materials. If a building is under construction, accumulated snow must be removed from the roof to avoid potential collapse. Ice can be a serious problem if it is allowed to accumulate on roofs, driveways, parking lots, equipment, recyclables, and solid waste. Ice should be melted on driveways and parking lots using salt and sand. Buildings with sloped metal roofs will shed ice as the roof warms up. Therefore, nothing should be stored or parked under the eaves of a sloped metal roof when snow or ice are on the roof. Flat roofs must be designed to handle heavy snow loads.

Daily removal of snow and ice from equipment will help prevent maintenance problems. Block and battery heaters, along with special fuel additives will help make starting the equipment in cold weather much easier. To avoid potential damage, equipment and materials should be stored inside or on the side of the building away from the wind. The building will block the wind and prevent an accumulation of snow on the equipment and materials. In addition, heat may be necessary to warm the staff.

Be aware that on warm winter days and early spring, water will condense on the inside of uninsulated metal roofs dropping onto equipment and stored recyclables. To prevent this from happening, the roof should be insulated. If not insulated, your equipment and paper goods should be covered to protect from getting wet.

In the spring, rain can turn the facility site into a sea of mud if the site has not been prepared with proper fill and designed for water runoff. Paving the driveways and parking areas with asphalt or concrete will greatly reduce mud problems and dusty conditions that occur during a dry summer. In addition, paving makes winter maintenance easier especially for plowing snow.

SECTION III
COLLECTION AND SORTING OF RECYCLABLES

RECYCLABLES. The types and amounts of recyclable materials accepted at the transfer station will be determined by the *service area population, available markets, the processing and storage capacity of the facility, and the service area's willingness to recycle a particular material.* The materials collected for recycling should be those that have the **greatest cost avoidance** impact on your budget. In New Hampshire, materials that are typically recycled include: scrap metal, tires, leaf and yard waste, aluminum cans, newspaper, cardboard, steel cans, mixed paper, glass, and #1 and # 2 plastic. Depending on the material, it may be collected, prepared, and stored inside or outside. For example, scrap metal and tires may be collected and piled outside. However, to maintain quality material, newspaper, cardboard, and mixed paper must be kept under cover.

Markets are a major factor in determining which recyclables to collect and how they must be prepared. The markets in your area may require recyclables to be prepared by one of the following methods: *baled, compacted, granulated, crushed, loose or loose in gaylords.* If baled, the bale must be of the size, weight, and density required by the market, and must remain in one piece when handled. If the market accepts recyclables such as commingled containers (glass, plastic, and tin), the compaction should not be so high as to break the glass. Some markets accept plastic that is granulated or crushed. You must be sure that the plastic is the type required and granulated to the size the market requires. Most markets for scrap metal and tires allow them to be collected outside in a pile. However, if your cost to remove tires is by weight and not by the individual tire, the tires should be stored undercover so you don't pay to remove rainwater along with the tires.

COLLECTING AND SORTING--BMPs

- The solid waste facility should be laid out in such a fashion as to allow the users to deposit their recyclables first as they enter the facility. Collection of MSW nonrecyclables should occur at the end of the collection line that is under the watchful eye of the operator. This design encourages users to recycle before depositing their MSW nonrecyclables. In addition, if there is a recycling building, the facility layout should allow the users to drive their vehicles along side the building where accessible openings are located to receive their

recyclables. This allows the users easy access to the collection bins for depositing their presorted recyclables.

- Tables/bins should be located within the recycling building and accessed by the users through openings in the side of the building. Above each opening should be a clearly marked sign identifying which presorted material should be deposited in which opening.
- The facility operators should inspect materials left on the table/bin by the users and place the material in the correct bin. Contaminants (materials which are not recyclable) should be removed and placed with the nonrecyclables. This is called a *secondary sort*. A very small percentage of contaminants may be all that is required to have a load of recyclables rejected and returned at the facility's expense.
- If small bins are used for the secondary sort, they may be mounted on wheels for easy mobility. In addition, if the material is to be baled, the bins may be constructed in such a fashion as to allow them to be lifted by a forklift or similar machine to empty into a baler. If the material is to be collected loose in gaylords, the gaylords should be set on pallets for easy moving by a forklift or pallet jack.
- Large permanent bins (bunkers) should be constructed of concrete or wood to store containers such as milk jugs, plastic soda bottles, glass containers, colored plastic containers, tin cans, and aluminum cans. The permanent bins should be protected from the weather, installed with concrete floors, large enough to hold the volume of material which will produce at least one bale, and easily accessible by equipment.
- Facilities that receive commingled recyclables must have a method for sorting including handpicking and/or machine separation using magnets, airflows, and optical equipment.
- TABLE 1 summarizes the collection and sorting considerations for several commonly collected recyclables. **Be Aware!** Always contact the buyer for exact specifications.

TABLE 1
COLLECTION AND SORTING OPTIONS FOR COMMODITIES

MATERIAL	COLLECTION	SORTING
Aluminum Cans	Aluminum cans are usually collected loose in bins/ gaylords.	Some secondary sorting is necessary to remove steel cans, low grade aluminum cans, and foil.
Glass	**Cullet** is remanufactured into new glass and must be collected and separated according to color (clear, brown, and green) without contaminants. **Aggregate** is crushed glass mixed with gravel or used alone as a construction aggregate in road construction, etc.	**Cullet:** Only food and beverage container glass is acceptable. Secondary sort is necessary to remove any contaminants and to separate by color. **Aggregate:** No secondary sort is needed. Contaminants such as ceramics, mirrors, and window glass are acceptable.
PETE (Polyethylene terephthalate)	PETE is usually collected loose in bins/gaylords.	A secondary sort is necessary to remove unacceptable plastic and contaminants.
Pigmented (Colored) HDPE containers	Colored HDPE is usually collected loose in bins/gaylords	A secondary sort is necessary to remove unacceptable plastic and contaminants.
Translucent (Clear) HDPE (High-Density Polyethylene)	HDPE is usually collected loose in bins/gaylords.	A secondary sort is necessary to remove unacceptable plastic and contaminants.
Household Paint	The collection area for paints should be in a heated area with an impermeable floor. For paint that is to be re-used, it should be collected according to protocol established by a paint re-use contractor.	Paint that is to be re-used should be sorted according to protocol established by a paint re-use contractor. Paints that are not to be re-used should be separated into oil-based and latex paint. Latex paint may be disposed of as a solid waste once hardened.

MATERIAL	COLLECTION	SORTING
Leaf and Yard Waste	Leaf and yard waste is usually collected in outdoor piles/rows.	The final product is usually screened to remove contaminants and organics that did not decompose.
Corrugated Cardboard (OCC)	OCC is usually collected in covered trailers or buildings to keep from getting wet.	A secondary sort is required for top dollar.
Magazines	Magazines are usually collected under cover in bins/ gaylords to keep from getting wet.	A secondary sort is usually necessary.
Mixed Paper	Mixed paper is usually collected under cover in bins/gaylords to keep from getting wet.	A secondary sort is required for most markets.
Newspaper	Newspaper is usually collected in covered trailers or buildings to keep from getting wet. Residents may collect it in brown bags.	A secondary sort is required for top dollar.
Office Paper	Office paper is usually collected under cover in bins/gaylords to keep from getting wet.	A secondary sort is usually necessary.
Brush	Collected in a pile.	Brush can be burned with a permit or chipped.
Scrap Metal	Scrap metal is usually collected in outdoor piles.	Higher revenue is obtained if separated into aluminum, copper and brass, and iron.
Steel (Tin) Cans	Steel cans are usually collected loose in bins /gaylords but are occasionally collected with scrap metal. Aerosol cans may be collected with steel cans.	Some secondary sort is necessary to remove aluminum cans and contaminants.

MATERIAL	COLLECTION	SORTING
Textiles	Textiles are usually collected under cover or in plastic bags to keep from getting wet.	It is necessary to check with market to find out if secondary sort is required.
Tires	Tires are usually collected loose in a tire pile or stacked in a trailer. For more specific information on tires, see Env-Wm 2605 of the Solid Waste Rules.	No sorting is usually done. Buyer may require rims be removed.
Used Oil*	Facility users should collect used oil in sturdy and clean containers. The collection area should be under cover and the floor constructed of an impermeable material such as concrete. Contact DES at (603) 271-2942 for used oil regulations and availability of grant funding for DIY used oil collection center.	The operator should visually inspect each container for contaminants such as antifreeze before poring into the storage tank. A funnel should be used to reduce spills
Used Oil Filters	Used oil filters should be collected in an area that has an impermeable floor such as concrete with berms and under cover. Contact DES at (603) 271-2942 for information on used oil filter regulations.	Since used oil filters contain a significant amount of oil, each one must be hot drained for 12 hours before being recycled. The oil should be collected in a structurally sound tank. Separate out terne (a tin & lead alloy) plated oil filters occasionally used in trucks and handle as a hazardous waste.

*Best management practices (BMPs) found in Env-Ws 421 (Drinking Water Source Protection Program) apply to solid waste facilities that handle more than household quantities of “regulated substances”, which includes oil. These BMPs establish minimum standards for managing regulated substances, to minimize the risk of groundwater contamination. The standards include containment, secondary containment, impermeable surfaces, storage, and containers.

SECTION IV
PREPARATION, STORAGE, AND TRANSPORTATION OF RECYCLABLES

PREPARATION--BMPs

The materials that you collect and sort should be (see Table 2) according to the requirements of your buyer that may include the following methods: baled, loose, granulated, and crushed. "Low-tech" methods are more labor intensive resulting in higher long term preparation and storage costs. In addition, if the facility is open to the users during the preparation of recyclables, the preparation should take place in an area inaccessible to the users.

If baled, the bale must be of the size and weight specified by your buyer. Materials that are baled typically receive a higher price. To decrease baling time for down stroke balers, a chute may be constructed which allows the operator to use a skid steer or similar equipment to load the baler. Another method is to use a conveyor belt to carry the recyclables up into the chute.

If loose, the recyclables such as newspaper and magazines are usually brought to the facility by the users in paper bags. If a secondary sort is not done, the paper bags may be put directly into a trailer. This method of collection may reduce the market value of the newspaper.

Those recyclables brought loose to the facility by users need to be collected in a container (bins, gaylords, bags, or rolloffs) and placed in a trailer or storage area. Gaylords placed on pallets for easy moving may be used for storing recyclables such as newspaper, magazines, and office paper. Plastic may be granulated to market specifications and collected in bins, gaylords, bags, or rolloffs. Glass may be crushed for shipment and stored in 55-gallon drums, concrete bunkers, or rolloffs.

STORAGE--BMPs

Depending on the material, recyclables may be stored inside, outside under cover, and outside without a cover. In some cases, outside storage requires the use of pads and/or berms. Information on the requirements for waste stockpiles including surface/pad configuration and drainage, year round access for inspection/removal management, maintenance of fire lanes,

maximum height and size, access control, free of debris, and access for removal of PCBs and CFCs from appliances is specified in Env-Wm 2104.05. TABLE 2 summarizes the preparation and storage considerations for several commonly collected recyclables. Fact sheets are available from DES at (603) 271-2975 or on the website: www.des.state.nh.us/sw.htm for many of the commodities listed in Table 2. As stated earlier--**Be aware!** Always contact the buyer for exact specifications.

TABLE 2

PREPARATION AND STORAGE OPTIONS FOR COMMODITIES

MATERIAL	PREPARATION	STORAGE
Aluminum Cans	Aluminum cans are usually baled but can be shipped loose in gaylords, rolloffs, and special trailers	Aluminum cans can be stored indoors or outdoors but must be covered to prevent accumulation of rainwater or snow.
Steel (Tin) Cans	Steel cans can be baled or shipped loose in rolloffs, gaylords, or dumpsters.	Steel cans should be kept under cover to prevent rusting. They may also be placed in the scrap metal pile.
Scrap Metal	For highest revenue, aluminum, copper, and brass should be stored separately from ferrous metals, usually in piles. Under federal law, CFCs must be removed from refrigerators and air conditioners before removal from the facility.	Scrap metal can be stored loose outside in a pile or rolloff and may be baled when picked up by scrap metal dealer.
PETE (Polyethylene terephthalate)	The market should be contacted for content and bale specifications. PETE is usually not shipped loose because of low weight compared to volume. It may be granulated.	PETE must be stored under cover to prevent exposure to sunlight, rain, and snow. Prior to baling, a large storage area is required to accumulate sufficient PETE for one bale.

MATERIAL	PREPARATION	STORAGE
Translucent (Clear) HDPE (High-Density Polyethylene)	The market should be contacted for content and bale specifications. HDPE is usually not shipped loose because of low weight compared to volume. It may be granulated or baled.	HDPE must be stored under cover to prevent exposure to sunlight, rain, and snow. Prior to baling, a large storage area is required to accumulate sufficient HDPE for one bale.
Textiles	Textile preparation depends on market specification and may be baled or shipped loose in plastic bags.	Textiles **must** be stored indoors in waterproof area because mildew can contaminate a whole bale or bag, making it worthless.
Mixed Paper	Mixed paper is usually shipped loose or in gaylords but may be baled.	Mixed paper must be stored under cover to keep from getting wet. The most efficient method is to have a trailer on site and fill it with mixed paper, as it is prepared. If stored in a building, area should be large enough to hold a trailer load. Some markets will allow you to mix loads such as mixed paper with cardboard or other combinations of different types of paper.
Corrugated Cardboard (OCC)	OCC preparation depends on market specification and can be loose (in trailers or covered rolloffs), in gaylords, or baled.	Storage of OCC must be under cover and protected from getting wet. It is most efficient to fill a trailer with cardboard, as it's prepared. Some buyers will allow you to mix loads, such as newspaper with cardboard or other combinations of different types of paper. If stored in building, area must be large enough to hold trailer load.

MATERIAL	PREPARATION	STORAGE
Newspaper (ONP)	ONP depends on market specification and can be loose in trailers, covered rolloffs, and gaylords, or baled.	ONP must be stored under cover to keep from getting wet. The most efficient method is to have a trailer on site and fill it with ONP, as it is prepared. If stored in a building, area should be large enough to hold a trailer load. Some buyers will allow you to mix loads such as ONP with cardboard or other combinations of different types of paper.
Magazines (OMG)	OMG are usually shipped loose or in gaylords and are occasionally baled alone or with other paper grades.	Storage of OMG must be under cover and kept from getting wet. Most efficient is to have a trailer on site filling it with magazines as prepared. If stored in a building, area should be large enough to hold a trailer load. Some markets will allow you to mix loads such as magazines with cardboard or other combinations of different types of paper.
Office Paper	Office paper is usually shipped loose or in gaylords but also may be baled.	Office paper must be stored under cover to keep it from getting wet. The most efficient method is to have a trailer on site and to fill it with office paper, as it is prepared. If stored in a building, the area should be large enough to hold a trailer load. Some markets will allow you to mix loads, such as office paper with cardboard or other combinations of different types of paper.

MATERIAL	PREPARATION	STORAGE
Glass	**Cullet:** Cullet is commonly shipped partially crushed or whole. Operator should contact market for specifications. **Aggregate:** Aggregate for local use is prepared using a crusher or run over with heavy equipment such as bulldozer. Preparation of aggregate for commercial requires meeting specifications such as for NH Department of Transportation.	**Cullet:** Cullet is stored in rolloffs, 55 gallon drums, or concrete bunkers. Concrete bunkers must be large enough to hold 20 tons of glass and for loading equipment to enter and remove the glass. Frozen glass can be a problem in the winter. **Aggregate:** Aggregate is usually stored in pile outside of building.
Household Paint	Paint that is to be re-used should be prepared according to protocol established by a paint re-use contractor. For latex paints that are to be disposed of in metal containers, the top should be removed allowing the paint to dry. Once the paint is dry, it should be removed and discarded with the household trash. In most cases, the metal container can be recycled with the scrap metal.	Paint that is to be re-used should be stored according to protocol established by a paint re-use contractor. Storage room must be heated to above freezing. *Oil-based paint that is not being re-used should be disposed of during a household hazardous waste collection day.
Leaf and Yard Waste	Leaf and yard waste is collected in a pile or windrow for composting. The pile or windrow should be turned on occasion. For town operated facilities, the public works department or residents use the finished product.	Leaf and yard waste can be stored outside in a compost pile or windrow. The pile should be located in an area away from surface waters and with a slight slope for drainage of rainwater. It may be screened to produce a higher quality product.

MATERIAL	PREPARATION	STORAGE
Used Oil	Used oil is collected in a structurally sound above ground tank set on an impermeable floor with spill containment. The oil should be poured through a fine screen to remove contaminants such as grit. Provisions should be made to draw off any contaminants that settle out before the oil is used as a fuel	The tank must be sealed at all times except when adding or removing oil. In addition, the tank must be clearly labeled with the words "Used Oil For Recycle". Contact DES at (603) 271-2942 or 1-888-TAKEOIL for used oil regulations and availability of grant funding.
Used Oil Filters	Used oil filters may be put through a special crusher that compresses several filters together extracting the oil and creating a compact lump of metal. Another method is to puncture the anti-drain back valve or filter dome and drain the oil into a leak proof container. This method can be designed to handle several filters at one time.	In most cases, used oil filters properly prepared may be stored and marketed with scrap metal. Contact DES at (603) 271-2942 for information on used oil filter regulations.
Tires	Tires usually require no preparation for transfer to market except some markets require removal of tires from rims.	Tires can be stored outside in piles that must meet specific storage regulations including size and height of pile. (See Env-Wm 2605)

TRANSPORTATION OF RECYCLABLES--BMPs

- In most cases, *baled recyclables return higher revenue.* Markets typically pay more for baled recyclables. In addition, baling allows more weight per volume to be shipped in each load as compared to shipping recyclables loose.
- Recycling markets generally pay maximum price for full loads. Contact the buyer for load specifications, including: weight and bale size. If the market provides transportation, loads less than "full" are usually charged a higher hauling fee.

- All types of recyclable paper and textiles are best transported in weather tight trailers.
- All types of loose and baled recyclable plastics are best transported in covered trailers or covered rolloffs.
- Whole or crushed glass and loose scrap metal are best transported in a rolloff.
- A good method for handling scrap metal is for the scrap metal dealer to bale it before transporting in an open trailer.
- Baled aluminum and steel containers can be transported in an open or weather tight trailer, however high moisture content means less revenue.
- Loose aluminum and steel containers can be transported in special screened enclosed trailers.
- Recyclables collected in gaylords are best transported in weather tight trailers.

SECTION V
NONRECYCLABLES

COLLECTION/STORAGE--BMPs

HOUSEHOLD TRASH -- In laying out a facility, always position the collection of nonrecyclable household trash in the last place adjacent to the operator's office. This allows the operator to monitor loads and it encourages users to deposit all their recyclables before throwing out their nonrecyclable household trash. If the users are allowed to dispose of their nonrecyclable household trash first, they may be tempted to dispose of their recyclables along with their nonrecyclables.

The most common method of collecting nonrecyclable household trash is for the users to throw their plastic bag of trash into a compactor. The compactor compacts the trash into a rolloff. Contact the trash hauler for their load specifications. If possible, the rolloff should be sized to fill up once a week. If it is too large and takes too long to fill up, it may freeze during the winter and produce obnoxious odors in the summer.

Another popular method is to have the users throw their bags of trash into a rolloff without compacting. Because there is no compaction, the rolloff with trash weighs much less than the compacted rolloff.

CONSTRUCTION & DEMOLITION DEBRIS (C&D) – At the present time, most New Hampshire communities manage C&D as a nonrecyclable. The majority of communities collects it in rolloffs and sends it to a permitted lined landfill for disposal or dispose of it in a C&D unlined landfill. This management technique is gradually being replaced by processing because of the closing of unlined landfills and the cost of disposal at a permitted lined landfill. Some C&D is now permit exempt, e.g. concrete, brick, stumps/clean wood, and asphalt.

Several facilities in the state have been permitted to process various components of C&D into marketable materials. This includes processing clean used sheet rock into new sheet rock,

chipping clean wood waste into fuel and mulch, crushing brick and concrete for use as an aggregate, and using old asphalt to make new asphalt. A company in Maine recycles asphalt roofing shingles into pavement products. Ferrous and nonferrous metals can be removed and sold. In addition, salvageable building components such as windows, doors, bricks, and beams may be sold or given away to reduce the volume of C&D that must be disposed of in a permitted solid waste facility. Most solid waste facilities charge for C&D.

BULKY WASTE -- Bulky waste consists of furniture, mattresses, box springs, and the like. As in the case of C&D, bulky waste is generally collected in rolloffs for transportation to a disposal site. However, because of the high costs of disposal, many communities are now requiring bulky waste to be dismantled before being brought to the transfer station or the facility operator will dismantle the bulky waste into its individual components and recycle them. Many solid waste facilities charge for bulky waste.

TRANSPORTATION--BMPs

In selecting a solid waste hauler, a municipality should develop a Request For Proposal (RFP). The RFP should include size and type of rolloff, weight of full rolloff, ownership of rolloff, distance and location of disposal facility, who pays disposal costs, bonding requirements, time and day rolloff to be transported, on call status in case of overflow of waste, and replacement of rolloff while other rolloff is being transported. Other elements a municipality should consider are the financial status of the hauler and condition of his equipment. In considering which proposal to accept, sometimes the cheapest bid fails to meet the needs of the municipality.

SECTION VI
UNIVERSAL WASTES

"Universal wastes" are those wastes that meet the definition of hazardous waste in the *NH Hazardous Waste Rules*, but which, during accumulation and transport pose a relatively low risk compared to other hazardous wastes. Wastes which DES has determined meet universal waste criteria include antifreeze, mercury-containing lamps and devices, certain types of batteries, and recalled or suspended hazardous waste pesticides regulated under the Federal Insecticide, Fungicide, and Rodenticide Act.

On October 14, 1998, DES adopted a universal waste policy to promote the recycling and proper management of universal wastes, including: antifreeze, mercury-containing lamps, mercury-containing devices, and certain batteries. Fact sheets on each of these universal wastes are available from DES at 271-2975 or at DES website address: **http://www.des.state.nh.us**. Questions on the universal waste policy should be directed to DES's Pollution Prevention & Education Section at 603-271-2956 or the Hazardous Waste Compliance Section at 603-271-2942.

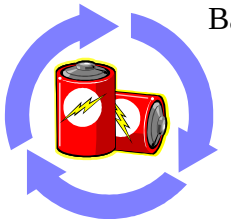
ANTIFREEZE

Antifreeze commonly consists of ethylene glycol or propylene and is used as an engine coolant. During its use in engines, antifreeze forms acids and may be contaminated by fuel, benzene, lead, and other hazardous constituents. These contaminants may cause the antifreeze to be characterized as a hazardous waste and managed in accordance with the requirements of *NH Hazardous Waste Rules*.

An alternative way to handle waste antifreeze is under the DES universal waste policy. A facility may collect waste antifreeze for recycling from other sites or generators without a permit provided the facility meets the handler requirements described in Fact Sheet WMD-HW-4 and other applicable federal, state, and local regulations. Waste antifreeze may not be disposed of by throwing it in the trash or pouring it down the drain.

On-site recycling at a generator's facility is not subject to permitting requirements. Antifreeze may be recycled using several different methods including: filtration, distillation, and ion exchange. Any filters or sludges generated from recycling waste antifreeze must be evaluated as to whether they are hazardous wastes and handled accordingly.

"UNIVERSAL WASTE" BATTERIES



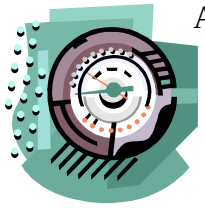
Batteries containing toxic constituents are found in many of the electronic devices we use in our homes and businesses. These batteries when disposed of in a landfill can leach toxic constituents and contaminate groundwater. When incinerated, the toxic constituents of batteries can be released to the environment as inhalable emissions or as leachable elements from the ash.

"Universal waste" batteries under the DES universal waste policy are those waste batteries that meet the definition of hazardous waste in the *NH Hazardous Waste Rules*, including: nickel-cadmium, small sealed lead acid, and lithium batteries. Lead-acid motor vehicle batteries are not included under this policy. For more information on lead-acid motor vehicle batteries, refer to DES fact sheet WMD-SW-4.

A facility may collect universal batteries for recycling from other sites or generators without a permit however; the facility must meet the handler requirements described in Fact Sheet WMD-HW-18. Batteries collected should be stored in a manner to prevent releases to the environment and to prevent fires. The following storage practices are recommended:

- Store rechargeable batteries that are not fully discharged so that their electrodes do not come in contact with the electrodes of another battery or a metal object such as the inside of a metal drum. Use tape to cover the electrodes.
- Do not tightly seal battery storage containers; in order to avoid the build up of hydrogen gas. Keep batteries under cover since some batteries react with water.
- Store batteries away from sources of sparks or flames.
- Do not store leaking batteries with non-leaking ones; acids from the leaking batteries may corrode the other batteries.

MERCURY-CONTAINING DEVICES



A number of devices contain mercury that may pose a hazard to human health and to the environment when improperly managed. Mercury is a heavy metal that can accumulate in living tissue and cause serious health problems. When mercury-containing devices are disposed of in a landfill or burned in an incinerator, the mercury can contaminate air, surface water, groundwater, and the soil. Examples of mercury-containing devices are thermostats, thermometers, switches, and relays.

Mercury-containing devices can be handled under DES's universal waste policy that encourages recycling and the proper management of the devices. A facility may collect mercury-containing devices from other sites or generators without a permit provided the facility meets the handler requirements described in Fact Sheet WMD-HW-17 and other applicable federal, state, and local regulations. Waste mercury-containing devices from businesses, industry, and institutions may **not** be disposed of as a solid waste unless they are below the regulatory limits for mercury when subjected to a toxicity test required by EPA and DES.

All releases from broken, leaking, or damaged mercury-containing devices must be cleaned up immediately and placed in a secure container that is structurally sound and compatible with the broken device. In addition, any releases that pose a threat to human health or the environment must be reported immediately to DES at 603-271-3899 or to NH DOS Hazmat Unit at 1-800-346-4009, and to the municipality in which the release occurred.

WASTE MERCURY-CONTAINING LAMPS

Mercury is a heavy metal found in fluorescent and high intensity discharge (HID) lamps that when handled improperly can pose a hazard to human health and to the environment. It can accumulate in living tissue and cause adverse health effects. When mercury-containing lamps are disposed of in a landfill and broken or burned in an incinerator, the mercury can contaminate air, surface water, groundwater, and the soil. In addition to mercury, HID lamps also contain small quantities of lead.

An alternative way of handling waste mercury-containing lamps is under DES's universal waste policy that encourages recycling and the proper management of the lamps. A facility may collect waste mercury-containing lamps from other sites or generators without a permit, provided the facility meets the handler requirements described in DES Fact Sheet WMD-HW-7 and other applicable federal, state, and local regulatory requirements. Handlers are prohibited from dismantling, crushing, or treating mercury-containing lamps under this policy.

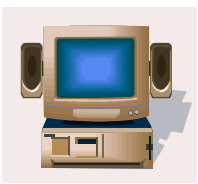
All releases from broken, leaking, or damaged mercury-containing lamps must be cleaned up immediately and placed in a secure container that is structurally sound and compatible with the broken lamp. It is recommended that a clean plastic lined box, fiber drum, or a plastic bucket with a lid that seals is used as the secure container since some metal containers may be incompatible with mercury.

To prevent breakage, the following practices are recommended:

- Store fluorescent lamps upright in the same boxes that new lamps were shipped in or boxes of similar size or use a fiber drum.
- Ensure that storage containers are sturdy; without holes, rips, or tears; and stable to prevent falling over.
- HID lamps should be wrapped or packaged individually.
- Use box spacers between lamps to prevent breakage.
- Do not tape lamps together as many recycling facilities will not accept them.
- Store boxes of lamps away from high traffic areas.
- Label containers of lamps.
- Do not overstack filled boxes of lamp.
- Store inside out of the weather.
- Seal boxes with tape as soon as they are filled.

For a list of fluorescent lamp and ballast recycling facilities, see DES Fact Sheet WMD-HW-7.

CATHODE RAY TUBES



In New Hampshire, computers are typically salvaged for valuable parts with the residuals recycled or disposed. Cathode ray tubes are often shredded and sent to smelting operations to recover lead or other precious metals. In more rare instances, the monitor glass may be recycled through "glass to glass" recycling operations, although the option is not as common in the Northeast due to the

lack of available recycling industries.

Many discarded computers end up in the solid waste stream, headed for disposal. Generally speaking, more commercial computers are likely to be recycled than the household counterpart. The local transfer/recycling center is often the recipient of these wastes. If the municipality separates the computers from the disposable trash, they must then store the computers, and arrange for transportation to alternate locations. Due to the cost of recycling, which can be many times that of disposal, many towns simply cannot justify recycling of the units.

From the regulatory standpoint, CRTs can be handled in a manner similar to the DES policy for universal wastes. Under such a policy, the CRT can be managed as a solid waste provided it is delivered to a recycling facility. A solid waste facility may collect a CRT from a homeowner for disposal, but not from a business unless a hazardous waste determination has been made prior to acceptance. Additionally, the operator should be aware of the conditions necessary for collection. Care should be taken to keep the items intact and not shatter or break the glass, as there is a danger of implosion. There are also ergonomic issues as these items can weigh in excess of 50lbs and will require sufficient storage space for their large volumes.

Recently, due to public and private recognition of the problems inherent with CRTs, industry has begun to implement programs for "takeback" of computer related products. IBM and Sony were the first to create these programs and it is expected that others will follow. For more information on vendors for computer recycling and takeback programs, visit the DES website at www.des.state.nh.us/pcas.

SECTION VII
OPERATIONS

OPERATOR REQUIREMENTS--BMPs

- The number of operators recommended to operate a solid waste facility depends on several factors including the number of users, amount and types of materials accepted, days and hours of operation, facility layout, and preparation done. See TABLE 3 below.
- TABLE 3 describes the number of operators recommended at solid waste facilities that are well designed with good lines of sight and are operating at peak efficiency.
- When the facility is operating, no less than 50% of the on-site workers who are directly involved in managing solid waste (including recyclables) must be DES certified operators. In addition, for every 1 to 5 operators, at least one shall be a supervisor with a Level III or IV certification. Certified operators maintain certification by attending one operator training workshop each year and paying a fee of $50.00.
- In the summer, when permanent operators are on vacation, additional part-time operators may be hired.

TABLE 3

OPERATORS RECOMMENDED

Number of Users	Materials Accepted and Preparation Done at Facility	Estimated Number of Operators Employed
up to 1,000	Comprehensive--Most recyclables accepted; all materials processed on site; good facility layout	2
up to 1,000	Minimal--A few recyclables collected and shipped commingled	1
1,000-2,500	Comprehensive--Most recyclables accepted; all materials processed on site; good facility layout	3
1,000-2,500	Intermediate--Some recyclables collected; a few are fully processed	2
	Table is continued on next page	

Number of Users	Materials Accepted and Preparation Done at Facility	Estimated Number of Operators Employed
2,500-5,000	Intermediate to Minimal--Some recyclables collected and shipped commingled; a few are fully processed	2-3
2,500-5,000	Comprehensive--Most recyclables accepted; all materials processed on site; good facility layout	4
5,000-10,000	Comprehensive--Most recyclables accepted; all materials processed on site; good facility layout	5
5,000-10,000	Intermediate to Minimal--Some recyclables collected and shipped commingled; a few are fully processed	2-4
10,000+	Comprehensive--Most recyclables accepted; all materials processed on site; good facility layout	6+

DAYS AND HOURS OF OPERATION--BMPs

The days and hours of operation should be for the convenience of the users, both year round and seasonal. Again, realize up front you will not satisfy everyone.

- Extended hours in the summer may be required.
- If the facility accepts waste from local businesses, plan to keep the facility open during some business hours.
- The days and hours that the facility operates must be clearly posted on a sign along with other information required by the NH Solid Waste Rules including the facility name and permit number, name, address, and telephone number of permittee, the days and hours open to accept waste, the type of wastes accepted, and the penalty for unlawful dumping.

RECORD KEEPING--BMPs

Maintain all operating records and annual reports as required by the NH Solid Waste Rules. To do so, refer to the record keeping rules (Env-Wm 2705.09, 2705.10, 2805.06, 2805.07, 2805.13, 2805.14 and 2806) for guidance.

En-Wm 2705.09 requires permittees to report all incidents or situations at a solid waste facility which involve a risk to human health, safety or the environment and/or which violate New

Hampshire Solid Waste Rules or the facility permit. The incident or situation must be reported verbally to DES as soon as practicable and a written report submitted within 5 working days containing information required by the rules.

En-Wm 2705.10 requires the permittee of a solid waste disposal facility receiving out-of-state waste to collect information from the transporter including: name and address of transporter, date of delivery, amount of out-of-state waste, and origin of waste (name of state). The information is to be maintained in a secure location and copies provided to DES when requested.

PART Env-Wm 2805 (ADDITIONAL OPERATING REQUIREMENTS) of Chapter Env-Wm 2800 contains several sections which apply to reporting requirements including Env-Wm 2805.06 which requires the permittee to compile and maintain records for all phases of facility operations at the facility. In addition, the rule specifies what information is to be included in the facility operating records.

Env-Wm 2805.07 requires the permittee to notify DES in writing within 30 calendar days of any change in the facility address, telephone number, key certified operators and contact person(s). The permittee shall also file an annual facility report with DES by March 31 for the prior calendar year operations. The annual facility report shall be submitted on a form provided by DES and contain the required information. In addition, the permittee shall report all changes in operational and ownership control of the facility and shall notify DES in writing prior to conducting any activity at the facility not authorized by the permit.

Env-Wm 2805.13 (Annual Report for Active Facilities, Content) specifies what information must be in the annual report for facilities that received waste during the reporting year. Env-Wm 2805.14 (Annual Report for Inactive Facilities, Content) specifies what information must be in the annual report for those facilities that did not receive waste during the reporting year and are either undergoing closure or have completed closure except for post-closure monitoring and maintenance obligations.

Under PART Env-Wm 2806, permittees of solid waste facilities shall maintain a closure plan in

sufficient detail that a third party could implement and complete the closure. This section also details the organization and preparation of the closure plan.

In addition to the above required information, facilities should keep records of equipment maintenance, including dates when oil and grease were changed, repairs were made, and tune-ups done.

FACILITY AESTHETICS AND MONITORING--BMPs

Env-Wm 2805.11(d)(5) requires as part of the facility operating plan, a description of the measures that will be taken to monitor and inhibit the following: windblown litter; odors; dust; vector production; spontaneous combustion; other fire hazards; generation of methane, hazardous and /or explosive gases; leachate; and spills.

One of the most important jobs for an operator is to keep the facility clean and odor and vector free. In addition to promoting safety, health and environmental control, a clean facility also encourages users to use the facility and gains acceptance by the neighbors. This requires a realistic time schedule for cleaning the facility; one that will be followed diligently.

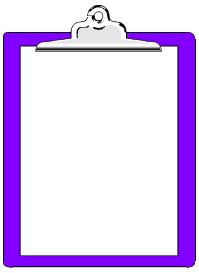
All windblown litter and rubbish should be picked up and any obvious odors dealt with immediately. Residents not washing out their containers may cause some odors. This attracts insects such as bees, hornets, etc. Odors may also come from the leachate that leaks from the compactor. This may be taken care of by spraying household bleach on the leachate. A locked cover over the entrance to the compactor, along with a fence around the facility will keep out animals and other troublemakers. Dust may be reduced around paving parking areas and growing grass in unused areas. Planting of flowers and small shrubs also improves the aesthetics of the facility. Local organizations such as the Boy and Girl Scouts can assist with beautification projects.

Operators must avoid mixing materials which cause spontaneous combustion. For example, rags used with solvents must not be piled together. Also, be careful of pool chemicals. Other fire hazards must be eliminated by careful monitoring of the facility including the electrical system, heating system, compost pile, and the unloading of hot loads.

The generation of methane and other gases must be monitored especially if there is a closed landfill on site. The methane gas may migrate through the soil and find its way into the facility or into nearby homes. In addition, many TS/RC receive propane gas cylinders and 55 gallon metal drums which are surreptitiously or otherwise left by the facility users. The gas or other explosive gases must be safely removed and the cylinder or drum properly prepared for market. **Do not** use a torch as it will ignite any explosive gas found in the cylinder or drum and cause it to blow apart.

The facility should be designed in a manner to retain spills and prevent them from entering the environment. Concrete pads with berms should be installed in areas subject to spills such as under the compactor and rolloffs, under the used oil collection center, under lead-acid battery collection area, and under any tire pile. In addition, materials should be kept on hand to absorb spills such as kitty litter for oil spills.

PROVISIONS FOR INSPECTIONS OF WASTE--BMPs



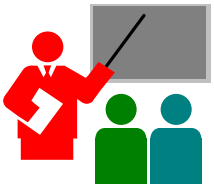
To encourage compliance with mandatory and voluntary recycling ordinances; and with state regulations, operators must have in place a strategy for inspecting waste deposited at the facility. The focus of the strategy is to confirm that the required recyclables and toxic materials have been removed. If recyclables are found, the facility user should be directed to the proper location for disposal. In the case of toxic material, the user should be informed about the proper disposal including Household Hazardous Waste Collection Days and the names of businesses that will accept the material.

The most common strategy is to have the operator located at the compactor and/or other suitable areas thus being able to observe the facility users as they deposit their trash and recyclables. Another strategy is to require the use of clear plastic bags allowing the operator to observe the contents. A facility may require all users to empty their trash bags to confirm that all required recyclables and toxic material has been removed.

PUBLIC EDUCATION--BMPs

From day one, a continuing job of the operator is to educate the public. Components of education may include public hearings, presentations to schools, civic organizations, news

articles, signs, and pamphlets.



Public hearings most commonly occur during the facility design stage and provide a good forum for the facility owner and operator to educate the residents about recycling, cost avoidance, and protecting the environment.

- Presentations to schools and civic organizations are a means to educate students and business leaders about solid waste management. This is a good opportunity to talk about protection of the environment, materials accepted at the facility, where it goes, and what they are made into.
- News articles released on a regular basis are a good method to inform the general public about a solid waste facility. Information in the articles can include how much of each material is recycled, how much money is saved by recycling, and reasons to recycle.
- Signs at the solid waste facility are a good way to inform facility users about the amount of money saved by recycling and where to deposit their materials.
- Pamphlets provide general information about the facility including days and hours of operation, materials that can be recycled, special fees, and materials not accepted.

SAFETY--BMPs

All employees that work at a solid waste facility and users who visit it have a right to expect the facility to be free from safety and health hazards. The owner/operator of a solid waste facility should be familiar with the New Hampshire Department of Labor rules, Chapter Lab 1400 Safety and Health of Employees. These rules apply to all buildings in the State of New Hampshire and deal with a wide range of safety and health issues including: machinery, tool, and equipment use; accident reporting requirements; bloodborne pathogens; confined space entry; drinking water; electrical requirements; fall protection; fire protection; flammable and combustible liquids; hazardous and toxic substances; general lighting; noise exposure; personal protective equipment; respiratory protection; stairs; storage; toilets; traffic control; and washing facilities.

Solid Waste Rule Env-Wm 2805.11(d)(6) requires a “contingency plan” which identifies foreseeable emergencies such as fire, explosion, operator injury, etc. and describes the appropriate response of the facility operator(s) for each emergency. Also required in the

contingency plan are the phone numbers for all local and state officials, which need to be notified in the event of an emergency.

- Prior to start-up, a safety manual should be developed. Operators should be required to be familiar with the content and should be trained in the policies and procedures. Part of the safety manual should deal with an emergency action plan including who to notify, evacuation procedures, and other procedures necessary to limit injuries and damage.
- TABLE 4 lists some typical workplace hazards and preventive measures.

TABLE 4

TYPICAL WORKPLACE HAZARDS AND MEASURES TO PREVENT THEM

Workplace Hazards	Injuries/Illness	Measures to Prevent Them
Materials Handling	Strains or Sprains to back, arms, or shoulders	Train employees in proper lifting techniques, use of back support equipment, and use of equipment such as skid steer or forklift.
Power Transmission Equipment	Amputations Cuts Fractured Bones	To prevent injuries, belts, pulleys, and power take offs should be protected by guards installed over them and lock-out/tag-out procedures be used during maintenance. In addition, operators should not wear loose clothing with long sleeves, shirttails should be tucked in and long hair kept under a cap.
Slip, Trip, or Fall	Strain or Sprain Head Injuries Fractured Bones	To avoid slips, trips, and falls, keep floors clean and dry, install non-slip surfaces, and install railings in appropriate places such as stairs and around the compactor. During winter, salt and sand icy areas, and place caution signs in hazardous areas such as stairs.
Repetitive Strain Injuries	Carpal Tunnel Syndrome Tendonitis Bursitis	To prevent injury, rotate duties and work in the correct position on the right equipment setup.

Workplace Hazards	Injuries/Illness	Measures to Prevent Them
Noise	Short term hearing loss Ringing Ears Long term hearing loss	To prevent injuries, operators should use hearing protection, limit exposure time, and insulate machinery.
Sanitation/Health	Fractured Bones Lung and Other Diseases Eye Injuries	Operators should wear steel toe boots, receive Hepatitis B shots, wash hands with bacterial soap, and wear dust masks when necessary. A first aid station with basic supplies and an eye wash station should be available at the facility.
Electricity	Electrocution Shock Burns	To prevent injuries, operators should use a lock-out/ tag-out procedure and only trained operators should maintain equipment.
Equipment/Vehicle Accidents	Fractured Bones Whiplash Head and Back Injuries Cuts	To prevent injuries while using equipment such as balers and glass crushers, operators should operate according to manufacturer's recommendations, use lock-out/tag-out procedures, and use the recommended safety equipment including safety goggles, hardhat, and leather gloves. When operating vehicles, operators should wear seat belts, operate according to manufacture's recommendations, use dock plates, and install roll over protection.
Flying Objects	Eye Injuries Cuts	To prevent injuries, operators should use eye protection, use hardhats, and place guards on all machines.

Workplace Hazards	Injuries/Illness	Measures to Prevent Them
Glass or Sharp Objects	Cuts Eye Injuries	To prevent injuries, operators should wear safety glasses or goggles and leather gloves and/or apron. Residents should not be allowed to throw glass into containers but should be required to place it on a table or in a bin. Hypodermic needles should be placed in a rigid plastic container prior to disposal.
Fires	Burns Smoke Inhalation	To prevent fires, operators should not mix materials that would result in spontaneous combustion. The fire chief and building inspector should inspect the facility for code violations that would lead to fires. The facility should have an alarm system for detecting fires especially when unattended. Equipment such as fire extinguishers should be readily available as required by law.

OPERATING PLAN--Env-Wm 2805.11(Operating Plan Content and Format) details the organization and information required for an operating plan. The operating plan consists of eight sections with required titles and prepared in a loose-leaf binder. The certified operator and other facility personnel should be very familiar with the operating plan and update it as needed.